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ABSTRACT

This handbook is designed for use by teachers engaged in interactive televised instruction in any of the following ways: via communications satellite reception, with student communication over telephone lines; via microwave systems, which allow two-way video and audio between sites; or via Instructional Television Fixed Service (ITFS), which is a low range broadcast signal usually incorporating one-way video for the teacher and two-way audio for voice interaction. The importance of student involvement, interaction, and participation elicited by the teacher in successful distance education is emphasized, and it is argued that teachers who will be using ITFS or microwave must feel comfortable in using the technology even though it has been shown that teachers who teach well in a televised learning situation are using the same educational techniques that have been proven effective in the regular classroom. In addition to a brief introduction, this handbook provides a discussion of distance learning and effective teaching as well as information on microwave and ITFS in Area 5; teleclassroom facilities; planning the course content; graphics and media resources (preparing graphics, copyright, and handouts); facilitators at receiving sites; how presenting teachers can look their best; how to present a lesson (equipment, sign on, the lesson, and attention span); other helpful hints (equipment related problems, classroom management, and humor); and suggestions for concluding and follow-up activities. A student feedback form is appended. (7 references) (DB)

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HANDBOOK

A Handbook for Teachers using Microwave or ITFS Interactive Instruction

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Area Education Agency · Fort Dodge, Iowa · IOWA CENTRAL COMMUNITY COLLEGE

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TELETEACHING HANDBOOK

A Handbook for Teachers using Microwave or ITFS Interactive Instruction

written by

Roger J. Rezabek *
Instructional Design Consultant

Arrowhead Area Education Agency
Media Services Division
1988

Acknowledgements —

This handbook is a compilation of many previous efforts. Special thanks are due to several people and institutions who have brought distance learning into the forefront of education in recent years, and also, to their efforts toward effective training of those who teach over these interactive systems. The following individuals have shared their training and handbook efforts with me for the benefit of future teleteachers. They include:

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IOWA CENTRAL TELECOMMUNICATION NETWORK

The Iowa Central Telecommunication Network is owned and operated by Iowa Central Community College, Fort Dodge, Iowa. Broadcasting capabilities began in January 1987 and the system will be completed by the summer of 1988. The two-fold system consists of microwave originating classroom or sites linked together with an ITFS system connecting all school districts in Area V. (See page 2 for further description).

Iowa Central Community College holds the Federal Communications Commission licenses in cooperation with the K-12 school districts, parochial high school units, and the prison facility at Rockwell City for Merged Area V.

The Iowa Central Telecommunication Network is a cooperative project with the local schools and has listed the following as its objectives:

1. To provide live interactive instructional television courses and programs for elementary, secondary, college, and technical levels of education in the school districts of Merged Area V.
2. To provide continuing professional education for the citizens of Area V in the fields of law enforcement, business, industry, agriculture, commerce, health, human services, legal services, medical services, financial services, and others as the need arises.
3. To provide opportunities for training and retraining of personnel in business and industry.
4. To provide comprehensive opportunities for educators to continue their professional education.
5. To provide ICTN facilities for use in educational programming, informational programming, agency staff training, and inter-agency communication.
6. To provide general information reflecting a global knowledge and interest in world events that is beneficial to the general public.

ICTN is a telecommunication system designed to aid in the delivery of educational services to the people of Area V. Of particular interest, is the use of the system to supplement and compliment local school district efforts in improving the delivery of quality educational programming to students at the K-12 level. The system is managed by the Assistant Superintendent of Curriculum and Instruction at Iowa Central Community College. The Assistant Superintendent supervises program scheduling, maintenance and operation of the system, and aids in the development of curriculum for use over the system. A technician is available to assist teachers in the mechanics of operating the system, both in projection and receiving (talk back) usage. Proposed classes are logged in with the ITFS coordinators at the ITFS originating site (See attached log sheet).

The system as designed is teacher oriented and teacher controlled. No cameramen are in the projection classroom. In this manner one is not inhibited when teaching classes via the ICTN system.

Table of Contents

Introduction 1

Distance Learning and Effective Teaching 1

Microwave and ITFS in Area 5 2

Teleclassroom Facilities 3

Planning the Course Content 4

Graphics and Media Resources 5

Preparing Graphics 5
Copyright 6
Handouts 6

Facilitators at Receiving Sites 6

How To Look Your Best 6

Clothing 6
Make-up 7
Movement 7
Eye Contact 7

You're On! 7

Equipment 7
Sign On 7
The Lesson 8
Attention Span 8

Other Helpful Hints 8

Equipment related problems 8
Classroom management 8
Humor 9

You Did It! 9

Concluding Thought 9

Appendix 11

Student feedback form 11

References 15

Introduction

Teaching methods have become more innovative in recent years with the changing needs of our students and society coupled with the availability of new technologies in our schools. One such technology is interactive televised instruction, also called distance learning or narrowcasting. From the point of view of the teacher, it may be termed **Teleteaching** - the imparting of knowledge or skills over a distance. Teleteaching can occur via satellite reception, with student communication over phone lines, via microwave systems which allow two-way video and audio between the teaching site and student sites, or via Instructional Television Fixed Service or ITFS, which is a low range broadcast signal usually incorporating one-way video of the teacher and two-way audio for voice interaction.

Distance Learning and Effective Teaching

Teaching requires interaction. In fact, all valid communication requires feedback from a listener to verify that the message communicated by the sender was received and understood.

The one thing that the ITFS and microwave systems make possible is the teaching of courses which would not ordinarily be taught in a K-12 school or could not be taught cost effectively to a small number of students in each school.

It is known that students from various age groups do learn through televised instruction. It is not surprising, however, that surveys of interactive learners indicate an advantage for students in the teaching room compared to students in the receiving (remote) classrooms. It is, in fact, the opportunity for learning at the receiving sites that becomes the advantage for the students. That is to say, the real advantage of distance learning is the education which takes place at the remote sites. The students receive instruction and communication which would not otherwise be available to them. The cost effectiveness of distance learning is that a teacher can reach a number of students — ten, twenty, even thirty — in several different districts while teaching once; whereas the same teacher would not be able to teach two or three students in one location at a time, five or ten times over. The cost of such time and travel would be prohibitive.

This use of modern technology is not really as new as it may seem, for ITFS and microwave systems have been in existence for many years. However, these systems have not been readily available to school districts because of prohibitive costs. Through grant money and community college initiative, as well as support from the state legislature, these systems have become available in the state of Iowa, and are becoming more popular throughout the United States. This is especially true in areas where rural school districts are common.

Can any teacher teach effectively over a televised system? There are certain considerations that need to be understood in distance learning. K-12 education assumes that virtually all students may enroll in a teleclass, not just those who are self motivated, those who have a financial investment in the course (as in college level), or those who have to have a good grade. The student involvement, interaction and participation elicited by the teacher is vital. The class should be performance and involvement oriented rather than lecture oriented.

Teachers who will be using ITFS or microwave must feel comfortable in using the technology. However, it has been shown that teachers who teach well over a televised learning situation are using the same educational techniques that have been proven effective in the regular classroom.

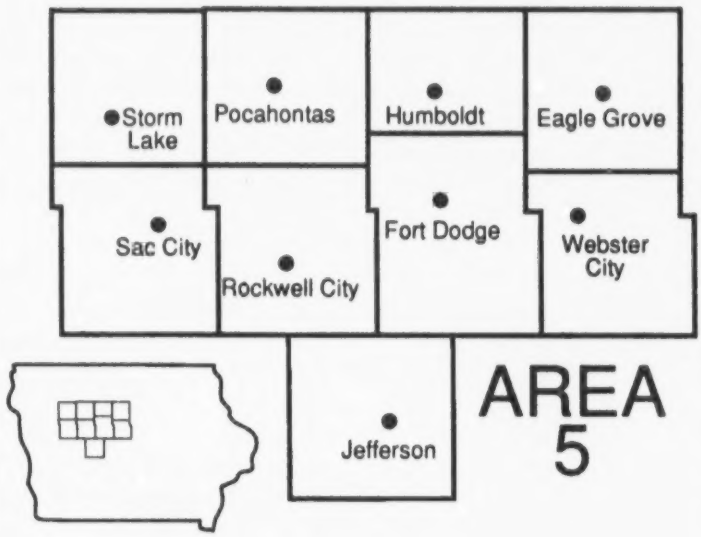
Microwave and ITFS in Area 5

Microwave signals are transmitted by line of sight to the next microwave facility, and can be relayed in turn to succeeding sites. The microwave telecommunication system is in operation at sites located in each of the nine counties (see map).

Schools where **microwave teaching/receiving classrooms** are located include:

Storm Lake - Iowa Central Building
Sac City High School
Pocahontas High School
Humboldt High School
Rockwell City High School
Jefferson High School
Webster City Iowa Central Building
Eagle Grove Iowa Central Building
Fort Dodge Iowa Central Community College-Library Building

ITFS sites are located in all of the Area 5 local school districts. Audio and video signals are transmitted from any of nine ITFS originating classrooms in the area via an ITFS transmitter. The signal can be seen and heard within a twenty mile radius in receiving classrooms which are equipped with a down converter and a television receiver/monitor set to channel 7 for viewing. In this manner all school districts within a county geographical area are linked with the ITFS system.



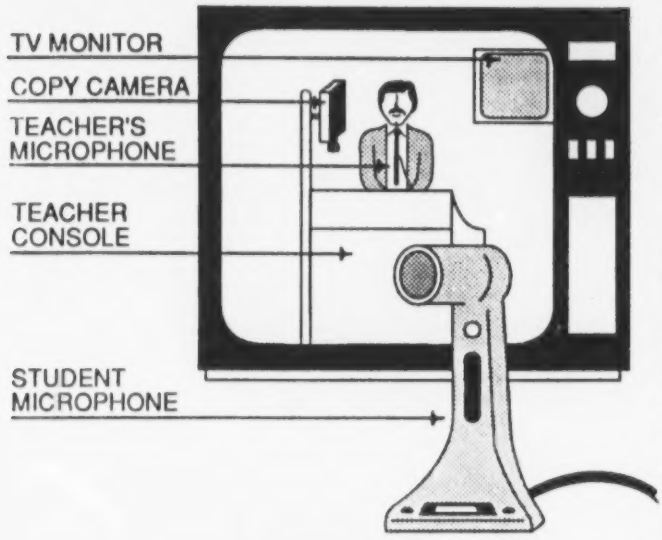
Schools in Area 5 where **ITFS teaching or originating classrooms** are located include:

Storm Lake High School
Sac City Elementary
Pocahontas High School
Rockwell City Elementary
Jefferson Middle School
Humboldt High School
Webster City High School Annex
Eagle Grove High School
Fort Dodge Iowa Central Community College - Voc Tech Bldg.

The microwave system and the ITFS systems are connectable, which enables instruction to originate from any one of nine teaching sites to virtually all of the school districts in the area. There are three other regions of the state which have ITFS and/or microwave systems in operation. Eventually, other areas of the state will become operational which could link together school districts throughout Iowa.

Teleclassroom Facilities

Each ITFS teleteaching room is equipped with up-to-date television equipment to enable the video and audio signals from the teacher and the students in that room to be transmitted to the receiving sites. The teaching console is equipped with an opaque display board which can be written on with colored markers or which can hold sheets of information or graphics to be transmitted via the copy camera located directly above that part of the teaching console. A television camera at the back of the room aimed toward the teaching console is the teaching camera which picks up the image of the teacher. A student classroom camera is located above the shoulder of the teacher as he or she faces the classroom and can be used to show the class that is being taught and student interaction if desired. A camera switcher is part of the console which allows a teacher to select the teacher camera, copy camera, or classroom camera for the image to be transmitted to the remote sites. The copy camera also doubles as a projected image camera. That camera can be adjusted and re-aimed at a projection screen to the side of the teaching station enabling films and slides to be shown by the teacher. A fourth camera on a tripod can be added to the system for use with projected images or blackboard images.



CLASSROOM FACILITIES

No special lighting is needed for the teaching environment. The cameras (Sony DXC-3000 3-chip) that are used can transmit high quality images with normal florescent lighting. No camera operators are used, but the teacher does have the ability to zoom in or out on the teacher camera, if desired, by using a zoom lever located on the teaching console. A small monitor is located in the right side of the teaching console showing the output of the camera switcher so that the teacher can monitor the outgoing signal at all times.

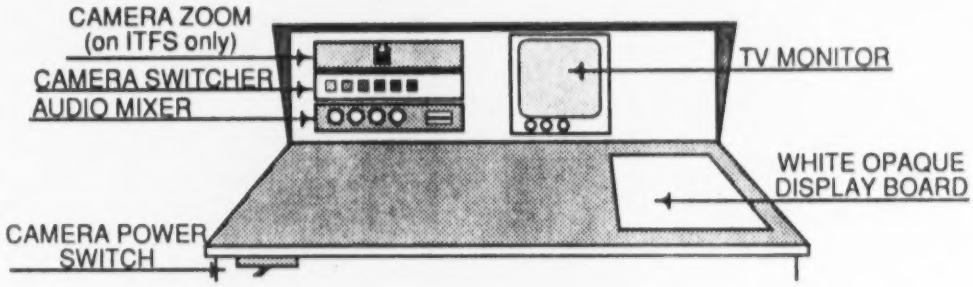
Students are located at tables in front of the teaching station and one to three microphones are located on each table to allow students to interact with the teacher at any time from any site. All microphones used in the system have a button, which, when pressed, automatically transmits the voice of the student to the teaching site. This allows immediate interaction and questioning by the students from any receiving site. A microphone is worn by the teacher to allow his or her voice to be transmitted clearly and audibly to all locations. An audio mixer is also installed in the teacher console and enables the teacher to adjust the volumes of any of the remote sites and the teaching microphone.

The receiving sites have television monitors in order for the students to see the teacher, demonstrations and media which are used by the teacher. It must be kept in mind, however, that the ITFS receiving sites do not have television cameras in order to transmit the student image back to the teacher. The microphone at each student table allows their voices to be transmitted back to the teacher but not their image.

Other parts of the system which are not normally seen or used by the teacher or students include the transmitting unit in each of the student sites. This unit transmits the voice back to the teaching site. An ITFS antenna, which is located at each receiving

site, receives the teaching signal, and the signal converter changes the teaching signal to a channel 7 television image for display on the classroom TV monitors. There are also other connection and transmission equipment which can couple an ITFS signal to the area microwave system. This enables other users in other counties to access the teaching.

The microwave teaching rooms are equipped similarly, except a TV monitor in the back of the teaching room displays at a given interval each of the receiving classrooms in turn.



TEACHER CONSOLE

Planning the Course Content

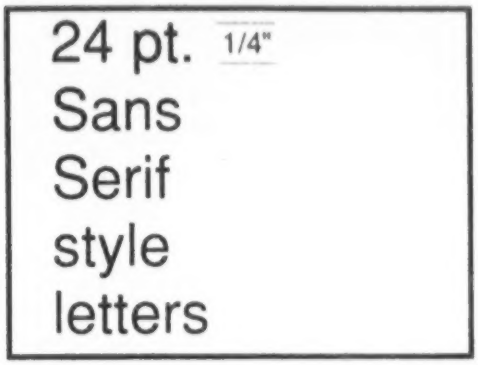
Although teleteaching has a variety of differences between normal classroom teaching, the basic approach and design of the instruction follows more or less the same process. Once the teacher has identified the course and lesson topic to be used in teleteaching, the process of designing and developing that topic into effective lessons and teaching strategies can occur. The goal of all teaching is that the information presented results in effective learning on the part of the students. One of the widely accepted approaches to the design of effective instruction was described in 1974 by Robert Gagne, (Gagne, 1974). Gagne developed nine events that should be a part of any instructional sequence. Those nine events include the following:

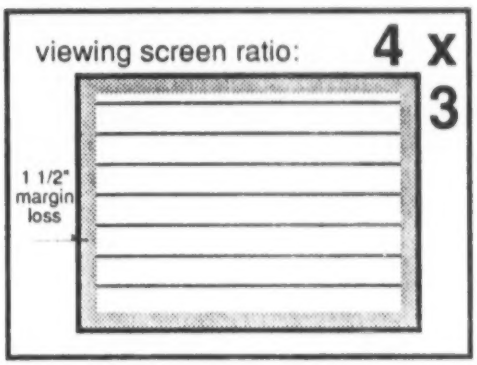
1. Gaining attention
2. Informing the learner of the objective
3. Stimulating recall of prerequisite learning
4. Presenting the stimulus material
5. Providing learning guidance
6. Eliciting the performance
7. Providing feedback to the student
8. Assessing performance
9. Enhancing retention and transfer

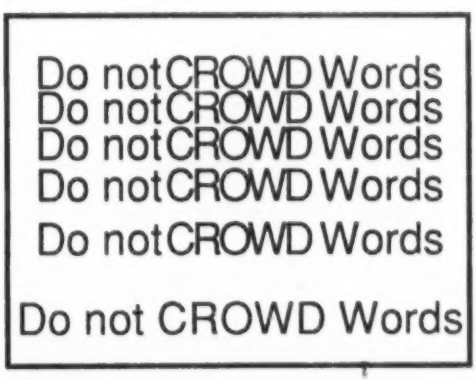
Items to take into account when developing the objectives will include the audience expectations, the age of the students, attention span, and the students' learning styles. Developing a topic outline, planning the session activities and adjusting for appropriate pacing, will also be essential parts of the planning. Elements that will be important to the retention of information will include effective graphics and media resources which will support and enhance the information presented. Considerations for using hand-outs, and, in particular, having those handouts available at all of the remote sites when needed will be important. Finally, providing sufficient evaluation procedures will be essential to verify and validate the learning which has taken place.

Graphics and Media Resources

With the availability of this electronic teaching medium an emphasis on visual messages is appropriate. Since all students in the receiving classrooms have the lesson coming to them on a television screen, it becomes essential that the images are clear, appropriate, and to the point, with little or no distracting, superfluous information.







PREPARING GRAPHICS —

Lettering on graphics should have similar technical characteristics as any good quality thermal transparency, but should always correspond to the 3 by 4 horizontal image ratio. Other important elements of preparing good graphics include:

- Lettering should be a medium or bold type
- Use Helvetica or similar san serif style lettering whenever possible
- Type should be 24 pt. or larger (1/4" high letters minimum) with copy camera zoomed in all the way
- Pre-typed pages or sheets should be xerographically enlarged to attain a minimum 1/4" lower case character size
- Allow 1" to 1 1/2" blank margins around all edges which may be lost in the transmission process
- Lettering colors should be dark
- Do not crowd words - use fewer words on a sheet and more sheets, i.e. 5 words/line, 5 lines/page
- For handmade lettering, print (no cursive lettering) with fine or medium point felt-tip marker on pastel colored paper (blue, yellow, green, gray).

For drawings, pictures, symbolic representations or graphics keep in mind that the viewing screen has a ratio of 3 high by 4 wide. The screen on a 25" diagonal TV is approximately 15" high and 20" wide. Graphics, drawings, etc. should correspond to the same proportions. Keep drawings simple, allow for the 1 1/2" or 10% margin loss on all visuals. Use **matte finish** photos - not glossy. And laminated materials should have **matte lamin** instead of regular or glossy lamin.

COPYRIGHT —

Copyrighted material such as text pages, magazine and journal articles, recorded music, films, slide and filmstrip sets and video taped programs have copyright protection. Many such items have different rights and restrictions for broadcast and sometimes narrowcast reproduction than for in-class, face to face teaching.

Educational fair-use allows most of the above media to be used in whole or in part in a face to face educational setting. In narrowcasting the following guidelines are offered:

- Media which has been locally produced by a school district or AEA (photographs, slide-tapes, video tapes) may be transmitted over the system as needed.
- Copyrighted media in the area collection including, films, commercial video programs, instructional kits, vary according to the producer. Contact the Media Center Director to determine whether a film or tape is cleared for interactive teaching.

HANDOUTS —

Any materials or handouts for students should be in each receiving classroom prior to the start of class. Tests, worksheets, quizzes, note sheets, etc. must be designed, prepared and printed, then sent to each teleclassroom via the Media Center van, mail, UPS or other means. This process takes time. Facilitators at each receiving site must receive the handouts and have them ready for distribution during the class period. If FAX (facsimile) machines are available, they can be used for same day distribution. But keep in mind that sometimes machines break down and your FAX might not be able to send or receive that day. The best solution is plan ahead, print early and distribute to the sites with lots of lead time. Also, let all facilitators know when materials are being sent and when they should expect to receive them.

Facilitators at Receiving Site

Since the teacher cannot see the students in the ITFS classroom, the cooperation and support of the receiving classroom facilitator is vital. In Iowa these classroom cohorts are certificated teachers and are part of the teaching team.

Communicate with them prior to the first class session to work out the plan for the course, discipline strategies at each site, and their proper involvement during class sessions. Clarify your expectations and needs. Let them clarify their expectations and needs so it will be a cohesive team effort.

Facilitators are certificated teachers and are part of the teaching team.

How to Look Your Best

To teach over a televised educational system, there are a few considerations worth thinking about in order to look and feel your best during the teaching session.

CLOTHING —

Wear comfortable clothes. Most colors and styles will be fine, but try to wear solid colors rather than busy patterns; pastel colors rather than high contrast colors such as black, white or navy blue. Avoid herringbones or small check patterns which tend to vibrate in the TV picture. Bright reds and yellows occasionally shimmer in the TV picture and should be muted if possible. Jewelry should be kept to a minimum. Very shiny or highly reflective jewelry can reflect bright spots and flashes back to the camera which could distract students' attention.

MAKEUP —

Wear a minimum of makeup whether male or female. Rouge will highlight cheeks and reduce paleness. For shiny spots such as forehead, nose and receding hairlines use pancake makeup or powder to reduce glare.

MOVEMENT —

Although a teacher does have a little bit of flexibility in moving around the teaching station, one is somewhat limited by the scope of the camera area and should simply be aware of this when trying to walk around. If a teacher tends to move about very often, the camera should be positioned on a wide angle shot in order to give the teacher maximum flexibility without walking out of the picture.

EYE CONTACT —

One of the most important elements of maintaining effective communication is eye contact and feedback to the receiver. Although in an ITFS instructional setting, the teacher will not be able to see the students other than the ones that are in the teaching room, there is the availability of voice interaction to and from any of the remote sites. On the other hand, the effectiveness of communication is often felt more from the eye contact of the teacher or the speaker than it is by some of the other factors. Therefore, it is important to maintain eye contact not only with the students in the teaching room, but also with the students in the remote classrooms. This is done simply by looking directly into the camera lens and talking or presenting the information desired.

One technique that has been used to help people get used to speaking into a camera and maintaining eye contact with that camera lens is the following: when you are alone, draw a 4" solid black circle on a piece of paper and put it on the wall. Practice your presentation by looking directly at that black spot. This will be similar to the inanimate television camera which will be staring at you from the back of the room. It does not take very long before your mind subconciously accepts the fact that that spot is important. This will help enable you to maintain eye contact very effectively with all of the remote sites.

You're on!

EQUIPMENT —

All the teacher needs to do in order to activate the system is to first turn on the TV monitors. Then, turn on the power switch to the equipment on the teaching console, which activates the video switcher, TV set and the mixer located in the teaching console. Put on the microphone and adjust the mixer if needed. Finally take the lens caps off of the cameras that are located in the teaching room.

SIGN ON —

Before the class is scheduled to begin, the remote sites should check in in order to make sure that all equipment is working properly. This can be done in the following manner about ten minutes before class time: the teacher can say to the receiving classrooms, **"Please check in, Odebolt are you there?"** If the facilitator is in the receiving classroom in Odebolt and has the equipment working properly, that facilitator will be able to hear the teacher ask for a sign on and should respond, **"This is Odebolt, all equipment is working correctly"**, or **"This is Pomeroy. You're coming in loud and clear."** Any adjustments on the audio levels should be made at this time in order to have all of the signals correct before class time. The teacher then should go down the list of sites until all receiving sites have checked in and it is verified that all of the equipment is working correctly. If a problem should be encountered at this time, prior to the sign on and roll call, the appropriate people should be contacted immediately in order to take care of any equipment problems.

THE LESSON —

Before the class begins, try to communicate with the facilitators for any logistical organization that is needed, such as the location of papers, handouts, testing material, surveys, etc. Make sure that all is ready at each of the sites so that materials can be handed out to all of the students at the same time with minimum interruption. At the scheduled start time for the class, the teacher should have a roll call to help the students become comfortable with the microphones in all of the locations, then introduce the lesson and begin the regular instruction. Try to have an attention getter at the beginning of the class in order to heighten interest and also give students an introduction or a glimpse of what the presentation is going to be about. Smile and maintain eye contact during the presentation with students both in the teaching room as well as in the remote sites. Be friendly and encouraging to all students. Beware of appropriate pacing during the presentation. Try to alternate teacher-directed or presentation parts with student speaking parts, involving and interacting with the students frequently. Try to involve all of the remote sites by calling upon students or calling upon locations of the remote student sites for the questions or answers and interaction.

The real advantage of distance learning is the education which takes place at the remote sites.

Remind the students that they should feel free to ask questions anytime, and that they should identify themselves by name and location at the beginning of their comment. **"This is Tracy Jones at Clarion, and I have a question ..."** Answers to questions should be thorough yet brief. As with all instruction, students asking questions must be addressed but without letting one student dominate the lesson. On the other hand, several students asking related questions might indicate that the instruction was not fully understood. There may need to be a review right at that point.

ATTENTION SPAN —

Try to be very sensitive to the attention span of the students especially for elementary and middle school age students. Try to have a change of pace activity every ten minutes of so. This change of pace is important for certain high school groups as well. The change of pace activities will heighten student interest, keep them from becoming distracted or bored and result in greater retention.

Other helpful hints

EQUIPMENT RELATED PROBLEMS —

If no one responds from one of the remote sites, continue attempting to contact them by way of the microphone since all equipment should be on all the time and the teacher's voice should be received in all of the receiving sites. Possible problems could be that the facilitator or the students are not there, it could be that a power switch is not on, or it could be that a mixer switch is not set correctly. Check all of these at the teaching site, and if nothing else, have someone call the school where the signal is not being received, to make sure that their equipment is on and functioning correctly. If the equipment should be working, but is not, contact the engineer at Iowa Central Community College for immediate attention.

In utilizing the copy camera, pay special attention to the size of the lettering and size of the graphics needed in order to be viewed easily by the people watching the television set. Practice moving the camera from the copy stand to the projection screen if it will be used. If possible, organize the material so that a projected portion of the lesson can be shown at a certain time and not have to be switched back and forth from a projection position to a copy position more than once or twice during the class period.

CLASSROOM MANAGEMENT —

Classroom management problems such as students who are not paying attention or who are making noises that are interfering with the teaching process, should be handled with a minimum amount of interruption to the rest of the teaching process. In the remote sites, the facilitators are responsible for the classroom management. In the teaching site, the teacher must handle the classroom management in a smooth but strict manner whenever possible unless an aide is present to handle discipline.

HUMOR —

Perhaps most importantly — keep your sense of humor. Try to make the most of all classroom situations even when things just aren't working right. In the entertainment industry, the expression is: "The show must go on." In distance learning this expression holds true as well. Make the best of it — your audiences await. Have patience in handling little problems and they will work out eventually. Learn from each session how to make the next one go more smoothly, it will.

You did it!

A few suggestions for concluding and follow-up activities might be video taping the teacher presentation for review by the teacher or for review by any of the students who may want to look at that class session again. This could be done in each of the remote sites also. Another follow-up activity will be to assess student achievement. This can be done in a variety of ways. For example, by using pre-test and post-test activities, using quizzes during the session or simply using the student interaction and student responses to get an indication of the level of understanding.

TELETEACHING — reaching many students in other localities ...

It is also recommended that student feedback questionnaires be used. These surveys assess the students' interest in the classroom information and presentation, and give teachers an indication of how well the topic is being accepted by the students. An example of a feedback form is included in the back of this booklet.

Another followup activity would be to make recommendations for future teaching sessions. These can be items that the teacher would like to incorporate into his or her teaching strategy for the next time or the next lesson or the next topic, as well as suggestions which could be incorporated into a system-wide adjustment. The teacher should think about improvements from an equipment standpoint, a resource standpoint and a system standpoint. The facilitators at each remote site can be an excellent source of feedback information for the teacher.

Concluding Thought

The ITFS and microwave technology that is at the fingertips of the teacher has the potential of reaching students near as well as far away in an instantaneous method of interactive instruction. This gives the teacher feedback and an assessment of the effectiveness of the lesson. The technology is designed to allow the teacher ease of usage as well as accuracy and quality of presentation. With certain conditions taken into account in the planning stages of the lesson, and consideration given during the presentation to maintaining effective communication with all of the students, educators can venture with confidence into this new area of electronic teaching. **Teleteaching** — reaching many students in other localities with effective instruction. Good luck in all of your efforts.

Appendix

SYSTEM EVALUATION QUESTIONAIRE...
BY THE STUDENTS

SYSTEM EVALUATION QUESTIONNAIRE OF THE SETOC TELECOMMUNICATIONS BY THE STUDENTS

Please respond to the few questions given below so we may determine what YOU think about the effectiveness of the telecommunications delivery system as an extended educational tool. We are *not* evaluating the content of the course(s) you offered but rather *how effective the system was for you*. The usefulness of the survey depends on the frankness with which the questions are answered. Your answers will be treated with the utmost confidentiality.

QUESTION 1 Have you taken a course using the telecommunications delivery system before this quarter/semester?

Yes 1 ☐ No 2 ☐

QUESTION 2 Would you take another course which used this type of delivery system?

Yes 1 ☐ No 2 ☐

QUESTION 3 Please state the reason(s) below why you would or would not take a course using this system again. (Please use the back of the page if necessary.)

QUESTION 4 Please respond to the following questions by checking one of the boxes ranging from Poor (1 on the scale) to Excellent (7 on the scale) or Do Not Know or Doesn't Apply (0 on the scale).

How effective was *this* telecommunications class for you:	DOESN'T APPLY	POOR		AVERAGE			EXCELLENT
a. as compared with traditional or conventional courses	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐ 7 ☐
b. as compared with other courses using telecommunications	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐ 7 ☐
c. overall	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐ 7 ☐

QUESTION 5 Please respond to the following questions by checking one of the boxes ranging from Poor (1 on the scale) to Excellent (7 on the scale).

How do you rate *this* telecommunications experience for distance education as compared to regular or traditionally taught courses with respect to:	POOR			AVERAGE			EXCELLENT
a. maintaining *your* attention	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
b. interacting with the teacher	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
c. interacting with other students	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
d. overall behavior of students	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
e. absenteeism of students	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
f. students' overall satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
g. amount of course work	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐
h. *your* overall satisfaction	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐	7 ☐

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QUESTION 6 The following questions are related to the *technical aspects* of the telecommunications delivery system.

How do you rate the following:	POOR			AVERAGE			EXCELLENT
a. the quality of the TV picture	1	2	3	4	5	6	7
b. the quality of the audio	1	2	3	4	5	6	7
c. distribution of print material	1	2	3	4	5	6	7
d. the classroom environment	1	2	3	4	5	6	7
e. the functioning of the equipment	1	2	3	4	5	6	7
f. the technical aspects, overall	1	2	3	4	5	6	7

QUESTION 7 The following questions are related to additional aspects of the telecommunications delivery system. Please respond as you did before.

How do you rate the following:	DOESN'T APPLY	POOR		AVERAGE			EXCELLENT
a. distant site technical coordinator	0	1	2	3	4	5	6	7
b. camera operator	0	1	2	3	4	5	6	7
c. distant site facilitator	0	1	2	3	4	5	6	7
d. admin. support: originating site	0	1	2	3	4	5	6	7
e. admin. support: receiving site	0	1	2	3	4	5	6	7
f. overall administration	0	1	2	3	4	5	6	7

QUESTION 8 What types of media, if any, have been used in any of your classroom experiences? (Please check all that apply.)

a. 16mm film	1	g. Preproduced video	7
b. 35mm slides	2	h. Self-produced video tapes	8
c. Super 8 film	3	i. Preproduced audio tapes	9
d. Videodisc	4	j. Self-produced audio tapes	10
e. Computer-based instruction	5	k. No previous experience	11
f. Overhead projections	6	l. Other (please specify below)	12

_____

QUESTION 9 What was the course number and title of the course you took using the telecommunications delivery system?

a. Course Number (e.g., Economics 261) _____

b. Course Title (e.g., Intro to Statistics) _____

QUESTION 10 What are the *advantages* of taking a course offered using the telecommunication system for distant education? (Please use the back of the sheet if necessary.)

QUESTION 11 **What are the *disadvantages* of taking a course using the telecommunication system for distant education? (Please use the back of the sheet if necessary.)**

QUESTION 12 **Please list any suggestions for improving telecommunications for distant education or any other comments you may wish to make. (Please use the back of the sheet if necessary.)**

Thank you for taking the time to complete this questionnaire.

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